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10/773,404	02/09/2004	Harukazu Miyamoto	ASAM.0108	6600

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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/773,404	MIYAMOTO ET AL.	
	Examiner	Art Unit	
	LaTanya Bibbins	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In the remarks filed on March 1, 2007, Applicant amended claims 1, 7, 13, and 15-16 and submitted arguments for allowability of pending claims 1-16.

Response to Arguments

2. Applicant's arguments filed March 1, 2007 have been fully considered but they are not persuasive.

Regarding claims 1-6, Applicant arguers that neither the primary or secondary reference teach a first location and a second location are located at different locations on said medium and data concerning a maximum linear velocity (Vlmax) and a minimum linear velocity (Vlmin) at said first location and a maximum linear velocity (V2max) and a minimum linear velocity (V2min) at said second location are recorded at a predetermined location on said medium. However, the primary reference Lee discloses storing a maximum and minimum linear velocity on a predetermined location of the storage medium while the secondary reference, Kobayashi introduces the maximum and minimum linear velocities of multiple locations of the medium. In addition, nothing precludes operation at a linear velocity and as such the predetermined location is in an available linear velocity range. Therefore, as stated in the previous office, the obvious combination of Lee and Kobayashi disclose the limitations of claims 1-6.

Regarding claims 7-16, Applicant arguers that neither the primary or secondary reference teach a first location and a second location are located at different locations

on said medium and data concerning a maximum linear velocity (Vlmax) and a minimum linear velocity (Vlmin) at said first location and a maximum linear velocity (V2max) and a minimum linear velocity (V2min) at said second location are recorded at a predetermined location on said medium. However, the primary reference Lee discloses storing a maximum and minimum linear velocity on a predetermined location of the storage medium while the secondary reference, Akahira introduces the maximum and minimum linear velocities of multiple locations of the medium. In addition, nothing precludes operation at a linear velocity and as such the predetermined location is in an available linear velocity range. Therefore, as stated in the previous office, the obvious combination of Lee and Akahira disclose the limitations of claims 7-16.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US PGPub Number 2004/0004921 A1) and further in view of Kobayashi et al. (US Patent Number 5,828,639).

Regarding claim 1, Lee teaches an information recording medium on which information is recorded or from which recorded information is produced by irradiating with an energy beam moving on/along a track relative to said medium, wherein a first

location on said medium, data concerning a maximum linear velocity and a minimum linear velocity are recorded at a predetermined location on said medium and the predetermined location is in an available linear velocity range (see paragraph [0048]). Lee, however, fails to teach an information recording medium with a second location located at different locations on said medium and that the data recorded at the predetermined location contains data concerning a maximum linear velocity (V1max) and a minimum linear velocity (V1min) at said first location and a maximum linear velocity (V2max) and a minimum linear velocity (V2min) at said second location.

Kobayashi, on the other hand, teaches a disc (Figure 17 element 1) with a first location and a second location located at different locations on said medium (see Figure 19 rows 1 and 2, columns 1 and 2), and data concerning a maximum linear velocity (V1max) and a minimum linear velocity (V1min) at said first location and a maximum linear velocity (V2max) and a minimum linear velocity (V2min) at said second location (see Figure 19 rows 1 and 2, columns 9 and 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the optical disc with a plurality of zones as taught by Kobayashi with the optical disc taught by Lee. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to produce an optical disc with increased capacity (see Kobayashi column 10 lines 19-21).

Regarding claim 2, Lee teaches an information recording medium wherein said predetermined location on said medium lies in a control data zone in which data

concerning said medium are recorded (see the discussion of the control data zone in paragraph [0033] and the description of the reserved regions 30c-5 and 30c-6 in paragraph [0035]).

Regarding claim 3, Lee fails to teach an information recording medium wherein at least one of undermentioned conditions is satisfied: r1<r2, and V1max<V2max or V1min<V2 min where r1 represents a radial distance of said first location from a center of said medium and r2 represents a radial distance of said second location from said center of said medium. Kobayashi, however, teaches an information recording medium medium wherein at least one of undermentioned conditions is satisfied: r1<r2 (see Figure 19 rows 1 and 2, columns 1 and 2), and V1max<V2max or V1min<V2 min (Figure 19 rows 1 and 2, columns 9 and 10) where r1 represents a radial distance of said first location from a center of said medium and r2 represents a radial distance of said second location from said center of said medium.

Regarding claim 4, Lee fails to teach an information recording medium wherein r1<r2 and that V1min/r1<V2max/r2 are satisfied. Kobayashi, however, teaches an information recording medium wherein conditions that r1<r2 and that V1min/r1 < V2max/r2 are satisfied, where r1 represents a radial distance of said first location from a center of said medium and r2 represents a radial distance of said second location from said center of said medium (see Figure 19 rows 1 and 2, columns 1, 2, 9, and 10).

Regarding claim 5, Lee and Kobayashi fail to teach an information recording medium wherein condition that V1max<V2min is additionally satisfied. It would have been obvious to one of ordinary skill in the art at the time the invention was made to

modify V1max such that it is less than V2min. One of ordinary skill in the art at the time the invention was made would have been motivated to modify the velocities in order to produce an information recording medium with data zones with distinct minimum and maximum velocities which do not overlap.

Regarding claim 6, Lee teaches an information recording medium wherein at least some of recording/reproducing conditions corresponding to said maximum linear velocities (Vmax) and said minimum linear velocities (Vmin) are recorded at said predetermined location (see Lee paragraph [0048]). Lee fails to teach that the maximum and minimum velocities correspond to said first and second locations. Kobayashi, on the other hand, teaches a disc with maximum and minimum velocities corresponding to said first and second locations in Figure 19 rows 1 and 2.

5. Claims 7, 8, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US PGPub Number 2004/0004921 A1) and further in view of Akahira et al. (US Patent Number 5,729,513).

Regarding claim 7, Lee teaches a method of controlling an information recording medium on which information is recorded or from which recorded information is reproduced by irradiating with an energy beam moving on/along a track relative to said medium, a first location wherein data concerning a maximum linear velocity (V1max) and a minimum linear velocity (V1min) at said first location are recorded at a predetermined location on said medium, the predetermined location being in an available linear velocity range, said method comprising the steps of: reproducing said

data in precedence to recording or reproduction of the information (see Lee paragraph [0033] where the disc drive records data considering the prescribed recording speed recorded on the disc); Lee fails to teach a second location wherein data concerning a maximum linear velocity (V2max) and a minimum linear velocity (V2 min) at said second location, are recorded at a predetermined location on said medium, the predetermined location being in an available linear velocity range, said method comprising the steps of: controlling relative moving speed of said energy beam such that the linear velocity at said first location lies between said maximum linear velocity (V1max) and said minimum linear velocity (V1min); and controlling the relative moving speed of said energy beam such that the linear velocity at said second location lies between said maximum linear velocity (V1max) and said minimum linear velocity (V2 min).

Akahira on the other hand teaches a disk with a first location and a second location being located at different radial locations on said medium, wherein data concerning a maximum linear velocity maximum linear velocity (V2max) and a minimum linear velocity (V2 min) at said second location, said method comprising the steps of: controlling the relative moving speed of said energy beam such that the linear velocity at said first location lies between said maximum linear velocity (V1max) and said minimum linear velocity (V1min) (see Akahira column 7 lines 1-5 where the first location is between 30 and 40 mm and the velocity at this location lies between V1max which is 7.53 m/s and V1min which is 5.65 m/s); and controlling relative moving speed of said energy beam such that the linear velocity at said second location lies between said maximum linear velocity (V1max) and said minimum linear velocity (V2 min) (see

Akahira column 7 lines 1-5 where the second location is between 40 and 50 mm and the velocity at this location is 5.65–7.07 m/s which lies between V1max which is 7.53 m/s and V1min which is 5.65 m/s).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the disk of Akahira with the controlling method of Lee. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to improve the quality of the amorphous recording marks on the optical disk (see Akahira column 3 lines 1-12).

Regarding claim 8, Akahira teaches an information recording medium control method wherein control of said relative moving speed of said energy beam is realized by controlling a rotation speed of said medium (see column 6 lines 43-57 where Akahira teaches a rotational control method and the range of linear velocity of the recording head to the recording track).

Regarding claim 15, Lee teaches an information recording method of recording information on an information recording medium by irradiating with an energy beam moving on/along a track relative to said medium, said method comprising the steps of: reading data concerning a maximum linear velocity (V1max) and a minimum linear velocity (V1min) at a first location on said medium said data being recorded at a predetermined location on said medium, the predetermined location being inan available linear velocity range (see paragraph [0048]); and recording the information on said medium by controlling a relative speed between said medium and said energy beam on the basis of said data (see paragraph [0033] where the disc drive records data

considering the prescribed recording speed recorded on the disc and paragraph [0019]). Lee fails to teach reading data concerning a maximum linear velocity (V2max) and a minimum linear velocity (V2 min) at a second location on said medium, said first and second locations being located at different locations on said medium.

Akahira, however teaches data concerning a maximum linear velocity (V1max) and a minimum linear velocity (V1min) at a first location on said medium and a maximum linear velocity (V2max) and a minimum linear velocity (V2 min) at a second location on said medium, said first and second locations being located at different locations on said medium (see Akahira column 7 lines 1-5 where the first location is between 30 and 40 mm and the velocity at this location lies between V1max which is 7.53 m/s and V1min which is 5.65 m/s).

Regarding claim 16, Lee teaches an information reproducing method of reproducing information from an information recording medium recorded the information by irradiating with an energy beam moving on/along a track relative to said medium, said method comprising the steps of: reading data concerning a maximum linear velocity (V1max) and a minimum linear velocity (V1min) at a first location on said medium said data being recorded at a predetermined location on said medium, the predetermined location being in an available linear velocity range (see paragraph [0048]); and reproducing the information recorded on said medium by controlling a relative speed between said medium and said energy beam on the basis of said data (ssee paragraph [0021]). Lee fails to teach reading data concerning a maximum linear velocity (V2max) and a minimum linear velocity (V2 min) at a second location on said

medium, said first and second locations being located at different locations on said medium.

Akahira, however, teaches data concerning a maximum linear velocity (V1max) and a minimum linear velocity (V1min) at a first location on said medium and a maximum linear velocity (V2max) and a minimum linear velocity (V2 min) at a second location on said medium, said first and second locations being located at different locations on said medium (see Akahira column 7 lines 1-5 where the first location is between 30 and 40 mm and the velocity at this location lies between V1max which is 7.53 m/s and V1min which is 5.65 m/s).

6. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US PGPub Number 2004/0004921 A1) and Akahira et al. (US Patent Number 5,729,513) as applied to claim 7 and 8 above, and further in view of Sato (US PGPub Number 2002/0064110 A1).

Regarding claim 9, Lee and Akahira teach an information recording medium control method wherein a method of controlling the rotation speed for information recording is performed by constant angular velocity (CAV) control with a rotation speed (rpm) being constant (see Akahira column 6 lines 43-45). Lee and Akahira fail to teach an information recording medium control method wherein a method of controlling the rotation speed for information recording is performed by one of a control method selected from a group consisting of a constant angular velocity (CAV) control with a rotation speed (rpm) being constant, a constant linear velocity (CLV) control with a

linear velocity being constant and a combination of said constant angular velocity (CAV) control and said constant linear velocity (CLV) control.

Sato, on the other hand, teaches an information recording medium control method wherein a method of controlling the rotation speed for information recording is performed by one of a control method selected from a group consisting of a constant angular velocity (CAV) control with a rotation speed (rpm) being constant, a constant linear velocity (CLV) control with a linear velocity being constant and a combination of said constant angular velocity (CAV) control and said constant linear velocity (CLV) control, and wherein the control method to be actually employed is determined on the basis of result of reproduction of said data (see Sato paragraphs [0061] – [0064] and Figure 4 steps S11 and S16 and Figure 5 where the CAV, CLV and CAV/CLV recording methods are shown).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lee and Akahira with recording control methods used by Sato. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to insure that during recording the optimum recording power does not exceed the maximum output power of the laser diode (see Sato paragraph [0065]).

Regarding claim 12, Lee and Akahira fail to teach an information recording medium control method wherein a rotation of said medium is controlled through a constant angular velocity (CAV) control at a radially inner zone of said medium while being controlled through a constant linear velocity (CLV) control at a radially outer zone

of said medium. Sato, however, teaches an information recording medium control method wherein a rotation of said medium is controlled through a constant angular velocity (CAV) control at a radially inner zone of said medium while being controlled through a constant linear velocity (CLV) control at a radially outer zone of said medium (see Figure 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of lee and Akahira with that of Sato. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings because the control method of Sato is "effective in making the starting of the CAV-based recording operation at a high recording speed more reliable" (Sato paragraph [0077]).

7. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US PGPub Number 2004/0004921 A1) and Akahira et al. (US Patent Number 5,729,513) as applied to claim 7 above, and further in view of Chen (US PGPub Number 2003/0123352 A1).

Regarding claim 10, Lee and Akahira teach an information recording medium control method but fail to teach that linear velocities at other locations than said first and second locations are determined through a linear interpolation. Chen, on the other hand teaches an information recording medium control method wherein the linear velocities at other locations than said first and second locations are determined through a linear interpolation between said minimum linear velocity (V1min) at said first location

and said minimum linear velocity (V2min) at said second location and between said maximum linear velocity (V1max) at said first location and said maximum linear velocity (V2max) at said second location (see paragraph [0046] and Figure 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the control method of Lee and Akahira with that of Chen. In addition to utilizing the interpolation method to quickly and accurately determine the velocity, one of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to "quickly and acurately determine the optimum writing power" (Chen paragraph [0049]).

Regarding claim 13, Lee and Akahira teach an information recording medium control method wherein said data are set as initial values with information of previously recorded control data (see Lee paragraphs [0033] and [0035]). Lee and Akahira fail to teach that optimum conditions are determined by a learning control.

Chen, however, teaches that optimum conditions are determined by a learnng control (see the discussion in paragraph [0049] where the optimum writing power is determined).

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US PGPub Number 2004/0004921 A1) and Akahira et al. (US Patent Number 5,729,513) as applied to claim7 above, and further in view of Mizuno et al. (US Patent Number 6,996,052 B1).

Regarding claim 11, Lee and Akahira teach an information recording medium control method wherein a constant angular velocity (CAV) control is adopted for controlling a rotation (see Akahira Figure 4), but fail to specifically teach that the information recording medium includes a reflective layer, thickness of which is gradually decreased from a radially inner side of said medium toward a radially outer side of said medium. Mizuno, however teaches an information recording medium wherein said information recording medium includes a reflective layer, thickness of which is gradually decreased from a radially inner side of said medium toward a radially outer side of said medium (column 34 lines 10-13), and wherein a constant angular velocity (CAV) control is adopted for controlling a rotation of said medium (column 33 lines 48-54).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the control method of Lee and Akahira with the information recording medium of Mizuno. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to improve the quality of the amorphous marks during recording (see the discussion in Mizuno column 33 lines 64-67 and column 34 lins 1-9).

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US PGPub Number 2004/0004921 A1) and Akahira et al. (US Patent Number 5,729,513) as applied to claim 7 above, and further in view of Morishima (US PGPub Number 2003/0002409 A1).

Regarding claim 14, Lee and Akahira fail to teach an information recording medium control method wherein said data are determined on the basis of jitter. Morishima, on the other hand, teach an information recording medium control method wherein said data are determined on the basis of jitter (see Morishima paragraph [0027]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lee and Akahira with that o fMorishima. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to produce an information recording medium control method with improved precision and necessary signal processing (as described in Morishima paragraph [0027]).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571) 270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LaTanya Bibbins

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